

CLAIMS

1. A high refraction film having a refractive index comprising inorganic fine particles having an average particle diameter of from 1 to 200 nm comprising titanium dioxide as a main component.

2. The high refraction film of claim 1, wherein said titanium dioxide contains at least one element selected from the group consisting of cobalt, aluminum and zirconium.

3. The high refraction film of claim 2, wherein each element is contained in an amount of from 0.05 to 30% by mass based on the mass of titanium.

4. The high refraction film of claim 2, wherein said element is present in the interior of the inorganic fine particles.

5. The high refraction film of claim 2, wherein said element is cobalt.

6. The high refraction film of claim 1, wherein said inorganic fine particles have a specific surface area of from 10 to 400 m²/g.

7. The high refraction film of claim 1, wherein said inorganic fine particles are coated with at least one compound selected from the group consisting of inorganic compound, organic metallic compound and organic compound, which lower or eliminate photocatalytic activity.

8. The high refraction film of claim 7, wherein the inorganic compound which lowers or eliminates photocatalytic activity contains at least one element selected from the group consisting of cobalt, aluminum and zirconium.

9. The high refraction film of claim 7, wherein said compounds which lower or eliminate photocatalytic activity are an organic metal compound represented by the following general formula (I) and derivative thereof.



wherein R^1 represents a substituted or unsubstituted alkyl group or aryl group, R^2 represents a substituted or unsubstituted alkyl group or acyl group, m represents 0 or an integer of from 1 to 3 and n represents an integer of from 1 to 4, with the proviso that the sum of m and n is 4.

10. The high refraction film of claim 1, further comprising an organic compound binder.

11. The high refraction film of claim 1, wherein said inorganic fine particles are dispersed with a dispersant.

12. The high refraction film of claim 11, wherein said dispersant has an anionic group.

13. The high refraction film of claim 11, wherein said dispersant further has a crosslinkable or polymerizable functional group.

14. The high refraction film of claim 13, wherein said dispersant has a crosslinkable or polymerizable functional group

at the side chain.

15. The high refraction film of claim 13, wherein said dispersant has a weight-average molecular weight of not lower than 1,000.

16. A coating composition for forming a high refraction film having a refraction index of from 1.55 to 2.40 comprising an inorganic fine particles comprising as a main component titanium dioxide containing at least one element selected from the group consisting of cobalt, aluminum and zirconium.

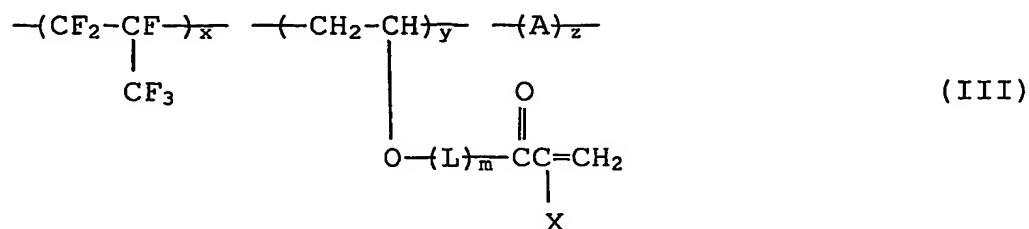
17. The coating composition for forming a high refraction film of claim 16, wherein said inorganic fine particles are coated with at least one compound selected from the group consisting of inorganic compound, organic metallic compound and organic compound, which lower or eliminate photocatalytic activity.

18. An anti-reflection film comprising a transparent support and a high refraction film of claim 1 formed thereon.

19. An anti-reflection film comprising a transparent support and at least one of a high refraction layer and a low refraction layer formed thereon, wherein said high refraction layer is a layer having a refractive index of from 1.55 to 2.40 comprising an inorganic fine particles comprising titanium dioxide as a main component and at least one element selected from the group consisting of cobalt, aluminum and zirconium, and said low refraction layer is a layer comprising a cured film of a copolymer as a main component comprising a repeating unit

derived from a fluorine-containing vinyl monomer and a repeating unit having a (meth)acryloyl group in its side chain.

20. The anti-reflection film of claim 19, wherein said copolymer is a copolymer of the following general formula (III).



wherein L represents a C₁-C₁₀ connecting group, m represents 0 or 1, X represents a hydrogen atom or methyl group, A represents a repeating unit derived from an arbitrary vinyl monomer and may be constituted of a single component or a plurality of components, and x, y and z each represent mol% of the respective constituent and represent a value satisfying the relationships $30 \leq x \leq 60$, $5 \leq y \leq 70$ and $0 \leq z \leq 65$.

21. The anti-reflection film of claim 19, wherein said inorganic fine particles are coated with at least one compound selected from the group consisting of inorganic compound, organic metallic compound and organic compound, which lower or eliminate photocatalytic activity.

22. The anti-reflection film of claim 21, wherein the inorganic compound which lowers or eliminates photocatalytic activity contains at least one element selected from the group consisting of cobalt, aluminum and zirconium.

23. The anti-reflection film of claim 21, wherein said

compounds which lower or eliminate photocatalytic activity are an organic metal compound represented by the following general formula (I) and derivative thereof.



wherein R^1 represents a substituted or unsubstituted alkyl group or aryl group, R^2 represents a substituted or unsubstituted alkyl group or acyl group, m represents 0 or an integer of from 1 to 3 and n represents an integer of from 1 to 4, with the proviso that the sum of m and n is 4.

24. A process for the production of the anti-reflection film of claim 18.

25. A protective film for polarizing plate comprising the anti-reflection film of claim 18, wherein the contact angle of the surface of the transparent support on the side thereof opposite the side having said high refraction film with respect to water is not greater than 40 degrees.

26. A process for the production of the protective film for polarizing plate of claim 25.

27. A polarizing plate comprising a polarizing film and two protective films having said polarizing film interposed therebetween, wherein the anti-reflection film of claim 18 is used as at least one of the two protective films.

28. A polarizing plate comprising a polarizing film and two protective films having said polarizing film interposed therebetween, wherein the anti-reflection film of claim 18 is

used as one protective film and an optically compensated film having optical isomerism is used as another protective film.

29. The polarizing plate of claim 28, wherein said optically compensated film has an optically isomeric layer provided on one surface of the transparent support, said optically isomeric layer has a compound having a discotic structure unit, the surface of a disc of said discotic structure unit is oblique to the surface of the transparent support and the angle between the surface of a disc of said discotic structure unit and the surface of the transparent support changes with the distance from the transparent support.

30. An image display device having the anti-reflection film of claim 18 or the polarizing plate of claim 27 or 28 disposed on the image display surface thereof.